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International Law & The Weaponization of Space[1]

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Introduction

As the United States found itself in a ideological struggle with the Soviet Union, interest in using satellites for reconnaissance grew. The United States began to formulate its political and diplomatic strategy concerning outer space on protecting the legality of satellite intelligence gathering. This generated interest in the legality of satellite overflights; concerns that became real after the Soviet Union launched Sputnik, the world's first man-made satellite, in 1957. Additionally, as work on space boosters progressed in the United States and the Soviet Union, more normative aspects of space travel began to be explored. Scholars, politicians as well as diplomats began to take an interest in the issue of space law — in particular, what should and should not be permitted in space.

This task did not prove to be easy. Much of the difficulty of regulating activities in space is linked to the issue of dual-use—such as technologies that can be used interchangeably for space launch vehicles and for ballistic missiles intended as delivery vehicles for weapons. In addition, the civilian or military purposes of satellites can be difficult to differentiate. Communication and observation satellites, have commercial applications. Systems such as the Global Positioning System (GPS), which is used for the guidance of many precision weapons, is employed by the public and private sectors for navigation.

"Peaceful purposes"

At the dawn of the space age the international community—including the space powers—urged that space should be used for peaceful purposes. In January of 1957, even before Sputnik was launched, Ambassador John Lodge expressed on behalf of the United States the hope that "future developments in outer space would be devoted exclusively to peaceful and scientific purposes".[2] In his address to the United Nations General Assembly he even went so far as to suggest that the testing of satellites and missiles (similar as in the case of nuclear technology) be placed under international supervision.

Further moves to ensure that outer space be used exclusively for peaceful and scientific purposes and for the benefit of mankind included the joint submission by four Western powers (Canada, France, the United Kingdom and the United States) to the United Nations Disarmament Commission, calling for the study of an inspection system that would assure that objects launched into outer space would be used exclusively for peaceful and scientific purposes. Adopted by the General Assembly, this became the first United Nations resolution on outer space, and the first time the phrase "exclusively for peaceful purposes" would be used in an authoritative United Nations text.[3]

The 13th session of the UN General Assembly, held in 1958, provided a forum for the debate on "Questions of the Peaceful Use of Outer Space". During this session the term "peaceful" was used as an antonym to "military". Sweden appealed to fellow Member States to "safeguard outer space against any military use whatsoever"[4], while the Soviet Union put forward a proposal to ban the use of outer space for military purposes. The General Assembly adopted resolution 1348 (XIII), which recognized the "common aim" of humankind that outer space "should be used for peaceful purposes only."[5]

Resolution 1348 established the Ad Hoc Committee on the Peaceful Uses of Outer Space (COPUOS). Its legal subcommittee issued a report in 1959 stating that the United Nations Charter and the Statue of the International Court of Justice were not limited to the confines of the Earth, and that the countries of the world have established a practice, in principle, that "outer space is, on conditions of equality, freely available for exploration and use by all in accordance with existing or future international law or agreements".[6]

The Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (also known as The Outer Space Treaty, or OST) was concluded in the first years of space exploration, after Yuri Gagarin's historic flight and before Neil Armstrong's walk on the Moon. The OST, which entered into force in 1967, prohibits the testing of weapons, the stationing of weapons of mass destruction (including nuclear weapons), the holding of military manoeuvres, or the establishment of military bases in space.

However, the OST does not cover the transit of nuclear weapons *through*

space or nuclear weapons launched from Earth into space in order to destroy incoming missiles (such as some of the American or Soviet missile defence systems which were originally permitted under the 1972 Anti-Ballistic Missile Treaty). Nor does the OST address other weapons (such as anti-satellite weapons, or ASAT) or the placement of conventional weapons in space.

The existing legal structure concerning outer space has a number of additional elements. The Partial Test Ban Treaty entered into force in 1963 and prohibits nuclear tests and explosions in the atmosphere or in outer space. The Convention on Registration of Objects Launched into Outer Space entered into force in 1976, which complemented the 1972 Convention on International Liability for Damage Caused by Space Objects. In December of 1979, the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies was signed and entered into force five years later. [7]

A second body dealing with outer space issues, the Ad Hoc Committee on the Prevention of an Arms Race in Outer Space (PAROS), was established by the Conference of Disarmament (CD) in 1985. Today PAROS is one of the main obstacles to consensus on the CD's programme of work.

The ambiguity of "peaceful uses"

When considering the early agreements and statements on outer space, one might have the impression that there has been accord on the peaceful use of outer space. Yet despite their claims that space should be reserved for peaceful uses, the United States and the Soviet Union were developing (and later launching) satellites that would serve a growing number of military purposes. As early as 1955, the US Air Force contracted the development of reconnaissance satellites - an indication that early space programmes were driven more by military considerations than civil or scientific ones.[8]

The seeming contradiction over peaceful use arises from the fact that international agreements never precisely defined 'peaceful' and 'outer space'. With ambiguous definitions subject to various interpretations, certain activities that one would not normally consider peaceful have been pursued.

For some nations the term 'peaceful' has been interpreted as 'non-aggressive' rather than 'non-military',[9] meaning that all military uses were and are allowed and lawful as long as they remain 'non-aggressive' as permitted under Article 2 (4) of the UN Charter, which basically prohibits "the threat or use of force".[10] The OST allows for 'passive military' use of space, for example through reconnaissance, surveillance, early warning or communication satellites.[11] The OST also permits military personnel to conduct scientific research in space.

Article 51 of the United Nations Charter, which relates to the right of self-defence, can be invoked in outer space. One might argue that using outer space for deterrent and defensive purposes serves the cause of peace and that only when it is used for offensive activities that it runs counter to the idea of peaceful use.[12] However, the distinction between offensive and defensive actions, active and passive weapons, and aggression and self-defence has become more and more blurred.

The lack of a clear definition was recognized as a potential problem at an early stage. In 1967, after expressing satisfaction concerning the adoption of the OST, UN Secretary-General U Thant stated that "the door is not yet barred against military activities in space. The crux of the difficulty is that space activity is already part of the arms race, a fact which we have to reckon with until humanity reaches the stage of an agreement on full and complete disarmament".[13]

Although nations continue to speak about the peaceful uses of outer space, it has become a matter of rhetoric rather than reality. The current international space regime cannot be viewed as peaceful in a strict sense, as activities related to defensive weapons and support of military functions are carried out in space. The militarization of space, and the military reliance on space-based intelligence, surveillance and navigation, is well established and continues to grow. It is impossible to turn back time in the hope of preserving space for truly peaceful purposes. But should states deem it necessary or desirable, it may not be too late to prohibit space weaponization and regulate space activities to prevent offensive and defensive activities and deployments.[14]

Boundary of space

When attempting to differentiate between permitted and prohibited activities in outer space, it is essential to have an operational definition of the boundary between airspace (where certain activities are allowed) and outer space (where comparable activities are banned, restricted or otherwise regulated). Similar to the question of defining peaceful uses, the demarcation of airspace from outer space has been left open to interpretation.

In practical terms, below an altitude of approximately 69 miles (110km), sustained orbit is essentially impossible. Above an altitude of approximately 53–62 miles (85–100km) aerodynamic lift is largely non-existent. However, there are aircraft that have flown higher than 62 miles and there are satellites and other spacecrafts that pass through orbits lower than 69 miles.

While stating that outer space should be used exclusively for peaceful purposes, the OST fails to define the boundaries of the area to be kept free from military uses (the boundary between the airspace and outer space). The OST could have made a very useful contribution to the definition question had it been consistent in its use of the term "outer space". The Treaty sometimes speaks of outer space without elaborating, and in other instances states that outer space includes the Moon and other celestial bodies.[15]

Other fora have not been any more successful in delineating the boundaries of outer space. Notwithstanding the fact that the definition problem has been on the agenda of COPOUS and its Legal and Scientific and Technical Subcommittees since 1959, there have been no concrete results regarding the demarcation of outer space. It has also been a subject of considerable debate among experts on international law and on space law, yet no consensus has materialized.

Weapons can be categorized according to deployment mode and with respect to their targets. There are weapons that can be based in space, in the air or on the ground. Similarly, these weapons can be aimed at targets in space, in the air or on the ground. For any future discussions on outer space activities, it will be essential to set the limits of airspace (where use of certain weapons would still be allowed) and outer space (where use of some weapons would not be). An agreed definition would eliminate the significant 'grey area' that has permitted the militarization of space and might one day permit its weaponization.

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The utility of outer space

While both the United States and the Soviet Union worked on ways of dominating space throughout the 1960s and 1970s, it was not until the 1980s that serious prospects for more active military uses of outer space began.

Yet over the same time period, civil uses of space have expanded greatly. With an estimated US$77-billion in revenues and more than 800,000 people employed worldwide in 1996, the global space industry is one of the world's vital economic engines. These activities are vital insofar that civilian space activities fuel some of the most important high-tech economic sectors: software and hardware development, sophisticated electronics, telecommunications, and advanced materials research. Furthermore, satellites have become essential to communications, navigation, broadcast, meteorology, and numerous other fields essential to our daily lives. This has therefore become one of the justifications put forward for the weaponization of outer space as these civilian assets are 'unprotected' and an attack on them could have very serious consequences on a technology-dependent society.

Current military uses of space mainly involve the use of three types of satellites: observation, communications and early warning satellites. Observation satellites are capable of generating high-resolution images, monitoring communications, and producing information concerning navigation, weather, targeting adjustments, troop movement, etc. Communications satellites allow military commanders to exercise control over distant forces and to receive real-time information about the progress of a campaign or about possible enemy actions to such a degree that was previously unknown. Early warning satellites can monitor enemy territory for military activity, such as missile launches, therefore providing additional crucial minutes of response time.

ASAT and missile defence

Until now, satellites have been known as 'force multipliers'; their military value stems from their ability to amplify the potency of other conventional forces rather than from their own intrinsic capabilities. Satellites capable of attacking targets on the ground are still fantasy, although eventually they could revolutionize land warfare. However, ASAT weapons, and weapons capable of intercepting ballistic missiles during the space flight phase of their trajectory are the main weapons of concern when considering the future of outer space, as they are currently under development and will further complicate efforts to define what is meant by the 'non-aggressive' use of space.

With the development of weapon systems for attacking satellites, the dangers of terrestrial warfare have been extended into outer space. An ASAT system may be based on Earth or else carried by a satellite. Ground-based ASAT weapons are of two types—missiles or high-energy laser weapons. Space-based ASAT systems concepts involve the use of satellites as weapons, conventional explosives or lasers carried onboard satellites, and charged particle beam weapons. The question of ASAT systems is particularly difficult due to the dual-use factor in that any country with a ballistic missile capability essentially has both a space-launch and an ASAT capability as well. The technology is basically the same.

Concern over the further militarization of outer space is largely emerging as a response to current American plans for ballistic missile defence. Precedents for such concerns have arisen—and waned—with the Regan Administration's Strategic Defence Initiative (SDI) in the 1980s. This ambitious project was scaled down in the 1990s and re-born, albeit briefly, as Global Protection Against Limited Strikes (GPALS). The latter was the subject of discussion by former US and Russian Presidents George H.W. Bush and Boris Yeltsin, and heightened expectations of technological co-operation between the former adversaries.

In 1997 the US Space Command published *Vision for 2020*[16] which laid out goals such as "the ability to dominate space" and "the application of precision force from, to, and through space". At the time the Clinton Administration and the US armed forces said that the ideas explored in *Vision for 2020* were only part of a future-looking exercise.

However, in 2000 President Bush asked Secretary of Defense Donald Rumsfeld to chair a commission to develop plans for America's activities in space. In January of 2001 the Commission to Assess United States National Security Space Management and Organization (also known as the Space Commission) issued a report that went much further than *Vision 2020*.[17] Recommendations from that report are currently being implemented. The United States has committed to building a missile defence system that will protect the US against limited ballistic missile threats, including accidental or unauthorized launches or 'rogue' threats.

The United States Missile Defence Agency's plans and deployment activities hinge on the notion of an evolutionary missile defence system. The term 'National Missile Defense' (NMD) was dropped in order to convey the intention to provide protection for allies or friends rather than just for the United States. The overall architecture of this system is not yet known. Instead, following the deployment of initial elements in 2004–2005, it will evolve as the testing and performance of various technologies proceeds. Whether such an evolutionary system involves elements of space weaponization is thus not certain, but neither is the option foreclosed.

According to these American policy documents and others, military space capabilities are to become the foundation for its national security and military strategies. The declared objective is complete space superiority.

A BMD system is based on target-detection, recognition, tracking and destruction systems. In the past these tasks have mostly been performed by ground-based radar sensors and by target interceptors armed with nuclear warheads. As such systems have numerous vulnerabilities, the United States perceives the need to further develop its BMD systems, thereby reducing a part of their vulnerability by placing them in space where they will theoretically be out of reach. However, it should not be forgotten that space surveillance and spacecraft command and control systems, ground receiving stations and space surveillance networks also have ground-based components that are vulnerable to attack.[18]

Since the withdrawal of the United States from the ABM Treaty in 2002, there is no longer a treaty prohibition against testing or deploying weapons in space other than weapons of mass destruction. However, there are elements of the missile defence plans of the United States, such as space-based interceptors, that might necessitate the modification or clarification of the terms of international treaties before their deployment.

Different conceptions of BMD have different implications for space militarization and weaponization. Existing American, Russian or Israeli systems involve space-based elements for communication and detection, but no actual weapons in space. Some ground- or air-based interceptors (whether kinetic-kill vehicles or lasers), however, have ASAT capabilities, and future interceptors based in space would constitute a clear weaponization of outer space. But existing international law does not prevent the development of two types of space-based weapons: kinetic-energy weapons (KEW) and directed energy weapons (DEW). KEW work by hitting another object at a very high speed. To increase their effectiveness, they may also include chemical explosives. DEW focuses energy beams at the speed of light to destroy a target.[19]

In the absence of any international legislation governing non-nuclear weapons in space, the close connection between missile defences and outer space represents a challenge for arms control advocates wishing to restrict or ban the deployment of all classes of weapons in orbit.

Arms control responses

The development and proliferation of new technologies applicable to ASAT and BMD systems and of new states with missile capabilities create a temptation to forge an arms control regime based on broad generic definitions, and technical demarcation, on the presumption that the broader the terms of restriction, the better it will cope with the variety of technologies and the differing levels of technical capacity among various programs.

It is probable that those opposed to the weaponization of space will argue for an ASAT ban as the most urgent step.[20] However, "there is a strong relationship between ASAT and BMD technologies and the technical, political action in one sphere will almost certainly affect the other".[21] Thus the pursuit of missile defence by the United States will further complicate efforts to differentiate between the testing and deployment of ASAT and BMD systems. Because of the similarities and in technology, some fear that the US commitment to BMD will put a ban on ASAT systems out of reach. Clearly, the question of weapons in space needs to be addressed in a comprehensive manner,[22] as it is easier to exclude armaments than to eliminate or control them once they have been introduced.[23]

Conclusion

Despite lofty rhetoric, the world failed to set aside outer space for exclusively peaceful purposes. The militarization of space has been a *fait accompli* since the beginning of the space exploration age. Until recently, man-made space objects have only acted as force multipliers. We now stand on the threshold of space weaponization. Nations have managed to transcend the heavens, a task long seen as impossible, yet they have done little to prevent the militarization of space. The opportunity to control or prevent its weaponization still exists if the international community chooses to take it.

Notes

[1]A version of this essay appeared in *Disarmament Forum*, of the United Nations Institue for Disarmament Research. One 2003.
[2]Quoted in P. Jessup and H. Taubenfeld, 1959, *Controls for Outer Space and the Antarctic Analogy*, New York, Columbia University Press, p. 252.
[3]General Assembly Resolution 1148 (XII), Nov.14, 1957
[4]Quoted in M.S. McDougal, H.S. Lasswell and I.A. Vlasic, 1963, *Law and Public Order in Space*, New Haven, Yale University Press, p. 395.
[5]See http://www.oosa.unvienna.org/SpaceLaw/gares/html/gares_13_1348.html.
[6]A/4141 pp. 22–25.
[7]See http://www.oosa.unvienna.org/SpaceLaw/spacelaw.htm
[8]Dr. Herbert F. York, "Nuclear Deterrence and the Military Uses of Space", in *Weapons in Space*, F.A. Long, D. Hafner and J. Boutwell (eds), 1986, New York, W.W. Norton.
[9]B. Jasani (ed.), 1991, The McDougal et al., (this is quoted in Vlasi's paper, no title provided*), Law and Public Order*, no. 5, pp. 397–99, quoted in A. Ivan Vlasic, The Legal Aspects of Peaceful and Non-Peaceful Uses of Outer Space, in *Peaceful and Non-Peaceful Uses of Space—Problems of Definition for the Prevention of an Arms Race*, Geneva, UNIDIR, p. 38.
[10]A. Ivan Vlasic, in B. Jasani (ed.), 1991, The Legal Aspects of Peaceful and Non-Peaceful uses of Outer Space, in *Peaceful and Non-Peaceful Uses of Space—Problems of Definition for the Prevention of an Arms Race*, Geneva, UNIDIR, p. 40.
[11]Jozef Goldblat, 1994, *Arms Control: A Guide to Negotiations and Agreements*, Oslo, PRIO, p. 119–23.
[12]Carl Christol, 1962, *The International Law of Outer Space*, Naval War College International Law Studies Series, vol. 55, p. 271.
[13]A/PV. 1499, p. 72
[14]Rebecca Johnson, 2001, Multilateral Approaches to Preventing the Weaponization of Space, *Disarmament Diplomacy*, no. 56 April.
[15]Ogunsola O. Ogunbanwo, 1975, *International Law and Outer Space Activities*, The Hague, Martinus Nijhoff, p. 31.
[16]United States Space Command, *Vision for 2020*, February 1997.
[17]*Report of the Commission to Assess United States National Security Space Management and Organization*, Washington DC (Public Law 106-65), 11 January 2001
[18]Bhupendra Jasani, *A new Dimension of the Arms Race*, Stockholm International Peace Research Institute; London: Taylor & Frances 1982 p. 76
[19]Bhupendra Jasani, 1987, Emerging Technologies, *Disarmament*, vol. X, no. 2.
[20]Rebecca Johnson, *op.cit.*
[21]"Anti-satellite weapons, countermeasures, and arms control", US Congress Office of Technology Assessment report OTA-ISC-281, September 1985, quoted in R. Johnson, Multilateral Approaches to Preventing the Weaponization of Outer Space, 2001.
[22]Rebecca Johnson, *op. cit.*
[23]United States, Arms Control and Disarmament Agency, 1982, *Arms Control and Disarmament Agreements*, Washington, DC, ACDA, p. 19.

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